Brain Arteriovenous Malformations (BAVMs) in Thailand: Therapeutic Experience and Clinical Outcomes in Ramathibodi Hospital

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Material and Methods

We retrospectively review all BAVM cases in Ramathibodi Hospital between May 1995 to July 2005, in aspects of clinical signs and presenting symptoms, therapeutic aspects and outcomes of treatment.

Results

263 cases of BAVMs are enrolled in the study with age ranging between 6 months to 68 years (mean age 27.8years). The presenting symptoms include hemorrhagic event (N=170, 64.6%), convulsion (N=50, 19%), Focal neurological deficits (N=7, 2.7%), Cognitive and mental impairment (N=1, 0.4%), intractable headaches (N=14, 5.3%) and 1 asymptomatic patient. BAVMs have been graded following Spetzler-Martin criteria as grade I (9.3%), grade II (29.2%), grade III (37.1%), grade IV (16.4%) and grade V (7.9%). 176 patients underwent endovascular treatment (N=176/263, 66.9%), using liquid adhesive material (N-Butyl-cyano-acrylate) in all cases (100%) with additional Guglielmi Detachable coils (GDC) in high flow intranidal fistulae in 2 cases. Therapeutic strategies in our institute are to cure the lesion (N=18, 10.2%), partial targeted embolization to obliterate the high risk angioarchitecture i.e. intranidal ruptured aneurysms (N=26, 14.8%), and to decreased flow and size of the BAVMs before operation (N=27, 15.3%) or stabilize to lesion for long term result of radiation therapy (Gamma knife in our institute) (N=105, 59.7%). We found procedural (embolization) complication about 7.4% (N=13), with 5.7% mobidity rate (N=10) and 1.7% mortality rate. (N=3).

Clinical outcomes are defined as modified Rankin scales of the last follow up, with follow up period 0-12years, means 3.6 years, showing score 0 (N=71, 40.3%), score 1 (N=60, 34.1%), score 2 (N=25, 14.2%), score 3 (N=3, 1.7%), score 4 (N=2, 1.1%) score 5 (N=5, 2.8%) and score 6 (N=3, 1.7%).

Conclusion

176 of 263 cases of BAVMs (66.9%) underwent endovascular treatment in our institute; mostly are symptomatic cases with evidence of previous rupture, therefore large proportion of huge lesions with instable angioarchitectures have been enrolled. In our experience, we are accustomed to use liquid adhesive (NBCA) with good results, even with high flow fistulas, with special conditions i.e. hypotensive technique and flow retardation with GDC coils, which to be discuss. Due to availability of radiosurgery in our institute, large proportion of cases have been sent for radiation therapy, including stereotactic radiosurgery (SRS) or radiotherapy(SRT). Our endovascular therapeutic strategies in these pre-radiation group is to obliterate the high risk aneurysm or high flow fistulas as much as possible. However the goal for decreasing size of the BAVMs, away from optic nerve or pons-midbrain, was not successfully achieved.

References

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